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ABSTRACT

The paper briefly explains operant conditioning as it pertains to special educators. Operant conditioning is thought to be an efficient method for modifying student behavior. Using the B. F. Skinner frame of reference, operant conditioning is said to include behavior modification and therapy, programed instruction, and computer assisted and computer managed instruction, each of which is briefly defined in outline form. A life experiences approach to operant conditioning is advocated for the low income groups and the disadvantaged. Three source materials in programed instruction and computer assisted instruction are then noted. (CB)

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OPERANT CONDITIONING FOR SPECIAL EDUCATORS

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Abstract

Operant conditioning (at one time called instrumental conditioning, as opposed to classical or Pavlovian conditioning) is an efficient method for modifying the behavior of students. Operant conditioning (the B. F. Skinner frame of reference) can include behavior modification and therapy, programmed instruction, and computer-assisted and computer-managed instruction. Some teaching methodologies are based upon operant conditioning, e.g., the engineered classroom, precision teaching, and the token economy classroom. Psychologically sound materials ought to be considered, not just methods. A life-experiences approach is advocated, especially for the poor (the so-called lower-lower class, the so-called disadvantaged). Otherwise, operant conditioning will not be as successful as it ought to be. This paper focuses upon operant conditioning for educators, special educators. Source materials in programmed instruction and in computer-assisted instruction are included.

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OPERANT CONDITIONING FOR SPECIAL EDUCATORS

William James (Talks to Teachers on Psychology. New York: Holt, Rinehart, & Winston, Inc., 1899, as cited in Rosenblith, Judy & Allensmith, Wesley. The Causes of Behavior II: Readings in Child Development and Educational Psychology. Boston: Allyn & Bacon, Inc., 1966.) said, "Psychology is a science, and teaching is an art; and sciences never generate arts directly out of themselves. An intermediary inventive mind must make the application, by using its originality." The purpose of this paper is to consider special programs in education. The focus will be on new methods for effectively modifying students' behavior.

Cogent terms are "operant conditioning," "behavior modification," "behavior therapy," "programmed instruction," "computer-assisted instruction," and "computer-managed instruction." The behavioral revolution in America began with E. L. Thorndike and J. B. Watson. Impetus was given to the behavioral approach, when B. F. Skinner began to describe in precise terms the factors that control an organism's behavior. Skinner's initial work and scientific principles came from his work with infra-human animals. Of utmost importance when trying to shape an animal's behavior, is to describe in very concrete, mechanical terms just what it is you want the animal to accomplish. McConnell ("psychoanalysis must go." Esquire, 1968, Oct., 25.) said "One of the reasons that our education of human beings has been such a dull and ineffectual process is that we never got around to describing in...detail just what terminal behavior patterns an educated person should show....the laws of learning, and of behavioral change, apply to people just as they do to animals."

Students who fall under the auspices of special education are those who, for one reason or another, have not been able to learn adequately, efficiently or effectively in the regular classroom setting. These students have special problems and require special techniques and programs if there is to be educational and psychological development and progress.

Special education should consider operant conditioning techniques when devising programs for individual students and for groups of students. Operant conditioning, derived from the descriptive behaviorism of Skinner is a technique that can be applied directly to the development of adaptive behavior. The teacher provides a favorable learning environment and at the same time arranges environmental factors to increase or decrease the frequency of certain responses. Behavior can be modified--"shaped" by applying principles of operant conditioning. One can gain development and control over relatively complex behavioral sequences, as well as, control over simple responses.

"Operant conditioning" is the generic term for all the other cogent terms mentioned above: "behavior modification," "behavior therapy," "programmed instruction," "computer-assisted instruction," and "computer-managed instruction." At times other terms are used also. Operant conditioning has been successfully applied to all categories of special education: speech impaired, emotionally disturbed, mentally retarded, learning disabled, hard of hearing, deaf, crippled or health impaired, visually impaired, multihandicapped.

The following summary statements consider operant conditioning and its representations in outline form. The statements are cumulative, i.e., all statements under "Behavior Modification; Behavior Therapy"

hold true for "Programmed Instruction." All statements under "Behavior Modification; Behavior Therapy" and "Programmed Instruction" hold true for "Computer-Assisted Instruction, Computer-Managed Instruction."

Behavior Modification, Behavior Therapy:

A. In operant conditioning, behavior is controlled by consequences and follows a Skinnerian model.

B. Adaptive behavior can be controlled by operant conditioning.

   1. Shaping behavior is one method of modifying behavior.
   2. Behavior can be accelerated, i.e., a desired behavior is increased.
   3. Behavior can be decelerated, i.e., a non-desired behavior is decreased.

C. Positive reinforcement, negative reinforcement, and punishment techniques

   1. Positive reinforcement
      a. is often called reward
      b. can be a motivation for learning
      c. ought to be selective (given only when the correct or desired response is emitted)
      d. ought to be emphasized
   2. Negative reinforcement
      a. generally occurs before or during the behavior
      b. is aversive
      c. enhances behavior
      d. may lead to rigidity of response

3. Punishment

   a. generally occurs during or after the behavior

   b. is aversive

   c. negates behavior

   d. may lead to deceptive behavior

4. Positive reinforcement

   a. generally occurs during or after the behavior

   b. is positive

   c. enhances behavior

   d. leads to desired behavior

Programmed Instruction:

A. Learning in small steps

   1. Positive reinforcement is effective when given for right responses after each step in the learning process.

   2. Learning is usually inefficient if each successive step is not mastered in turn. The material may become confusing and aversive.

   3. Small steps lead the student from the simple toward the complex and require him to lean more and more on what he has learned.

B. Active participation in learning

   1. Active participation is more effective than passive reception.

   2. If the student is personally responding in the step-by-step process and is receiving positive reinforcement for right responses he will learn faster and remember longer.

C. Learning with few or no errors

   1. We learn better if we make few errors.

2. Making mistakes is time consuming and often frustrating.
3. Many errors may make the learning situation become aversive for the student, which may result in a decline of natural motivation to learn.
4. When many mistakes are made it means
   a. one step may not lead logically to the next step and/or
   b. the steps in the process may be too large.

D. Learning at one's own pace
   1. Learning is usually best when the student proceeds at his own rate.
   2. Lessons proceed only if the student has completed a step and has understood it.

E. Various formats
   1. Programmed books
      a. Linear--each student follows the same progrqam
      b. Branching--students follow a program which is determined by their response (students are sent to alternative items depending on their responses to the particular item)
   2. Film strips can present programmed material.
   3. Tapes can present programmed material.
   4. Teaching machines--mechanical or electronic devices--can present programmed material.

Computer-Assisted Instruction, Computer-Managed Instruction:

A. Computers can present programmed material. Computers can function as highly technical, highly advanced teaching machines.

B. There is a newer phrase being used, "computer-managed instruction,"

which refers to general systems rather than to specific teaching-learning situations.

References to operant conditioning (in all its aspects) occur in many interpersonal journals. Those that summarize the research and writings may be especially valuable. For example, we have Psychological Abstracts in psychology and similar summaries in education, mental retardation, psychiatry, reading, and speech and hearing. For more specific references to programmed instruction materials and computer-assisted instruction materials, consider the following:

CAI/CMI Information Exchanges: Computer-Assisted/Computer-Managed Instruction. Newburyport, Massachusetts: Entelek. This reference contains abstracts of CAI/CMI research reports, specifications of CAI programs, and descriptions of CAI facilities. This book is kept up to date annually. Persons participating in the exchange receive monthly newsletters, working papers, conference reports, and microfiche copies of all research abstracts.

ERIC (Educational Resources Information Center). Clearinghours on Educational Media and Technology. Stanford, Calif.: Eric at Stanford, Institute for Communication Research, Stanford University. This Clearinghouse continually collects and disseminates information on programmed instruction, computer-assisted instruction, television teaching, instructional films, audiovisual techniques, etc.

Hendershot, C. H. (Editor and Compiler) Programmed Learning: A Bibliography of Programmed and Presentation Devices. Bay City, Michigan: C. H. H., 4114 Ridgewood Drive. This reference is kept up to date with new additions and supplements.